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10/709,521	05/11/2004	Wen-Sheng Hou	SISP0015USA	3520
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NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION P.O. BOX 506 MERRIFIELD, VA 22116				
EXAMINER				
PEREZ, JAMES M				
ART UNIT		PAPER NUMBER		
2611				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/709,521

**Applicant(s)**

HOU ET AL.

**Examiner**

JAMES M. PEREZ

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6, 9, 12-15, 17, 23-25 and 29-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9, 12-15, 17, 23-25 and 29-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Detailed Action***

This Office Action is responsive to the amendments filed on 3/13/2008.

Currently, claims 1-6, 9, 12-15, 17, 23-25, and 29-31 are pending.

***Response to Arguments***

1. Applicant's arguments, have been fully considered and are persuasive.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3-4, 12, and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fouche (USPN 5271043) in view of Poulbere et al. (USPN 6,785,350) in further view of Filipovic et al. (US 2005/0130687) with the applicant's admitted prior art (herein referred to as AAPA).

With regards to claims 1, 12, and 31, Fouche teaches a method of packet detection, wherein a receiver receives an input signal, the input signal the method comprising:

obtaining a correlation of the input signal (fig. 11: element 131);

performing convolution on the input signal using a pseudo random code (col. 1, lines 39-59)

detecting a spike obtained by the convolution and correlation of the received signal with said code (col. 2, lines 15-20).

Fouche does not explicitly teach two Limitations: Limitation 1) obtaining an average power of the preamble; wherein the packet is detected when the ratio of the correlation to the average power of the preamble is larger than a predetermined value; and Limitation 2) wherein the packet is detected when the ratio of the peak power to an average power of the noise is large than another predetermined value; and Limitation 3) the input signal comprising a packet, and the packet comprising a preamble which comprises a plurality of pseudo-noise (PN) codes, and detecting said packet based on peak power detection and correlation detection.

Limitation 1)

Poulbere teaches obtaining an average power of the preamble (col. 3, lines 15-42); and

wherein the packet is detected when the ratio of the correlation to the average power of the preamble is larger than a predetermined value (col. 1, lines 60-67 and col. 3, lines 15-42);

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to modify the known signal detection method of Fouche with the packet detection method of Poulbere in order to yield the predictable result and benefits of

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increased packet/received signal detection in order to demodulate the received data while minimizing bit errors.

Limitation 2)

Filipovic teaches a packet is detected when the ratio of the peak power to an average power of the noise is large than another predetermined value (paragraphs 49-50 and 58);

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to modify the known signal detection method of Fouche with the packet detection method of Filipovic in order to yield the predictable result and benefits of increased packet/received signal detection in a channel with a low signal to noise ratio.

Limitation 3)

AAPA teaches the input signal comprising a packet, and the packet comprising a preamble which comprises a plurality of pseudo-noise (PN) codes (fig. 1: paragraph 5); and

detecting said packet based on peak power detection and correlation detection (paragraphs 7-9: packet detection method and matching method and peak power and convolution).

Therefore in view of KSR, it would be obvious to one of ordinary skill in the art at the time of the invention to modify the known signal detection method of Fouche with the packet detection method AAPA in order to yield the predictable result and benefits such as using two packet detection method thus decrease the chance of a false packet detection.

With regards to claim 3, Fouche in view Poulbere in further view of Filipovic with AAPA teaches the limitations of claim 1.

Fouche is silent to determining the periodicity of peaks in the preamble.

The applicant's admitted prior art teaches determining the periodicity and code matching of the preamble (paragraph 7). It would be obvious to one of ordinary skill in the art that since the code matching gives the result of peaks in the preamble that the disclosed periodicity is of the peak of the preamble. Therefore it would be obvious to one of ordinary skill in the art at the time of the invention that the disclosed periodicity is the periodicity of the peaks in the preamble (paragraph 7).

With regards to claim 4, Fouche in view Poulbere in further view of Filipovic with AAPA teaches the limitations of claim 3.

Fouche in view of the applicant's admitted prior art teaches the determining the periodicity of the preamble as disclosed in claim 3.

Fouche is silent to teaching performing a convolution for a conjugate of a PN code and the PN codes to generate a processed preamble.

The applicant's admitted prior art teaches performing a convolution for a conjugate of a PN code and the PN codes to generate a processed preamble (paragraphs 7-9).

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to combine the pseudo random code synchronization method of Fouche with

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the packet detection methods disclosed by the applicant's admitted prior art in order to create an improved system capable of more accurate synchronization and packet detection in an wireless network.

With regards to claim 30, Fouche in view Poulbere in further view of Filipovic with AAPA teaches the limitations of claim 12.

Fouche further teaches the determining module further comprises a determining unit for determining if the packet arrives relative to a comparison (col. 2, lines 15-20 and claims 2-4).

4. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fouche (USPN 5271043) in view of Poulbere et al. (USPN 6,785,350) with Filipovic et al. (US 2005/0130687) and AAPA as applied to claim 3 above, further in view of Uchida (USPN 6366603).

With regards to claim 5, Fouche in view Poulbere in further view of Filipovic with AAPA teaches the limitations of claim 4.

Fouche teaches a correlation of the input signal as disclosed in claim 1.

Fouche in view of the applicant's admitted prior art are silent to teaching obtaining a correlation of the processed preamble.

Uchida teaches obtaining a correlation of the processed preamble (fig. 1: element 20 and fig. 4a: element 20: col. 4, lines 20-56).

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to combine the pseudo random noise preamble synchronization method of Fouche in view of the applicant's admitted prior art with the wireless pseudo noise communication system in order to create an improved system and method for enabling a wireless network capable of high-speed media access even under unfavorable electric-wave environment (Uchida: col. 2, lines 40-48).

With regards to claim 6, Fouche in view Poulbere in further view of Filipovic with AAPA teaches the limitations of claim 4.

Fouche in view of the applicant's admitted prior art teaches detecting a peak power of the input signal as disclosed in claim 1.

Fouche in view of the applicant's admitted prior art is silent to teaching detecting a peak power of the processed preamble.

Uchida teaches detecting a peak power of the processed preamble (fig. 1: element peak counter: col. 3, lines 9-27).

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to combine the pseudo random noise preamble synchronization method of Fouche in view of the applicant's admitted prior art with the wireless pseudo noise communication system in order to create an improved system and method for enabling a wireless network capable of high-speed media access even under unfavorable electric-wave environment (Uchida: col. 2, lines 40-48).



5. Claims 2, 9, 13-15, 17, 23-25, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fouche (USPN 5271043) in view of Poulbere et al. (USPN 6,785,350) with Filipovic et al. (US 2005/0130687) and AAPA as applied to claims 1 and 12 above, further in view of Seto (US 2004/0247059).

With regards to claim 2, Fouche in view Poulbere in further view of Filipovic with AAPA teaches the limitations of claim 1.

Fouche is silent to teaching filtering the input signal.

Seto teaches filtering the input signal (fig. 1: element 120).

Therefore it would be obvious to one of ordinary skill in the art to combine the preamble synchronization and correlation unit of Fouche with the power calculating method and apparatus of Seto in order to create an improved system with the capability to measure a signal-interference ratio with a high degree of accuracy (paragraph 7).

With regards to claim 9, Fouche in view Poulbere in further view of Filipovic with AAPA teaches the limitations of claim 1.

Fouche in view of the applicant's admitted prior art are silent to teaching obtaining an average power of noise of the midamble.

Seto teaches obtaining an average power of the midamble (paragraphs 104-111). It would be obvious to one of ordinary skill in the art that the midamble in Seto can be replaced with a claimed preamble since the midamble is used for synchronization purposes (paragraph 8). Therefore it would be obvious to one of

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ordinary skill in the art to combine the preamble synchronization and correlation unit of Fouche with the power calculating method and apparatus of Seto in order to create an improved system with the capability to measure a signal-interference ratio with a high degree of accuracy (paragraph 7).

With regards to claim 13, Fouche in view Poulbere in further view of Filipovic with AAPA teaches the limitations of claim 12.

Fouche teaches a correlation calculating module (fig. 10: element 131).

Fouche is silent to teaching two limitations: Limitation 1) the correlation being calculated using the preamble, and Limitation 2) a power calculation unit for calculating the average power of the preamble.

Limitation 1)

The applicant's admitted prior art teaches the correlation being calculating using the preamble (paragraph 8).

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to combine the pseudo random code synchronization method of Fouche with the packet detection methods disclosed by the applicant's admitted prior art in order to create an improved system capable of more accurate synchronization and packet detection in an wireless network.

Limitation 2)

Seto teaches obtaining a power calculation unit for obtaining an average power of the preamble (paragraphs 104-111). It would be obvious to one of ordinary skill in

the art that the midamble in Seto can be replaced with a claimed preamble since the midamble is used for synchronization purposes (paragraph 8). Therefore it would be obvious to one of ordinary skill in the art to combine the preamble synchronization and correlation unit of Fouche with the power calculating method and apparatus of Seto in order to create an improved system with the capability to measure a signal-interference ratio with a high degree of accuracy (paragraph 7).

With regards to claim 14, Fouche in view Poulbere in further view of Filipovic with AAPA and Seto teaches the limitations of claim 13.

Fouche teaches the correlation calculating module outputting to a determining module (col. 2, lines 15-20 and claims 2-4).

Fouche is silent with respect to the correlation calculating module further comprises a division unit for dividing the correlation of the preamble by the average power of the preamble and outputting a division signal to the determining module.

Seto teaches the correlation calculating module further comprises a division unit for dividing the correlation of the midamble by the average power of the midamble and outputting a division signal to the determining module (paragraphs 105-119). It would be obvious to one of ordinary skill in the art that the midamble in Seto can be replaced with a claimed preamble since the midamble is used for synchronization purposes (paragraph 8). Therefore it would be obvious to one of ordinary skill in the art to combine the preamble synchronization and correlation unit of Fouche with the power calculating method and apparatus of Seto in order to create an improved system with

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the capability to measure a signal-interference ratio with a high degree of accuracy (paragraph 7).

With regards to claim 15, Fouche in view Poulbere in further view of Filipovic with AAPA and Seto teaches the limitations of claim 13.

Fouche teaches the correlation calculating module outputting to a determining module (col. 2, lines 15-20 and claims 2-4).

Fouche is silent with respect to teaching the correlation calculating module comprises a multiplication unit for multiplying the average power of the preamble by a predetermined value and outputting a multiplication signal to the determining module.

Seto teaches correlation calculating module comprises a multiplication unit for multiplying the average power of the midamble by a predetermined value and outputting a multiplication signal to the determining module (paragraphs 105-119). It would be obvious to one of ordinary skill in the art that the midamble in Seto can be replaced with a claimed preamble since the midamble is used for synchronization purposes (paragraph 8). Therefore it would be obvious to one of ordinary skill in the art to combine the preamble synchronization and correlation unit of Fouche with the power calculating method and apparatus of Seto in order to create an improved system with the capability to measure a signal-interference ratio with a high degree of accuracy (paragraph 7).

With regards to claim 17, Fouche in view Poulbere in further view of Filipovic with AAPA and Seto teaches the limitations of claim 16

Fouche is silent to teaching the peak power detecting module further comprises a division unit for dividing the peak power of the preamble by average power of the noise and outputting a division signal to the determining module.

Seto teaches comprises a division unit for dividing the peak power of the midamble by average power of the noise and outputting a division signal to the determining module (paragraphs 105-119). It would be obvious to one of ordinary skill in the art that the midamble in Seto can be replaced with a claimed preamble since the midamble is used for synchronization purposes (paragraph 8). Therefore it would be obvious to one of ordinary skill in the art to combine the preamble synchronization and peak detecting module of Fouche in view of the applicant's admitted prior art with the power calculating method and apparatus of Seto in order to create an improved system with the capability to measure a signal-interference ratio with a high degree of accuracy (paragraph 7).

With regards to claim 23, Fouche in view Poulbere in further view of Filipovic with AAPA and Seto teaches the limitations of claim 17.

Fouche in view of the applicant's admitted prior art teaches the peak power detecting module and determination module as disclosed in claim 12 and the division module is taught in claim 17.

Fouche does not explicitly teach comparison unit for comparing the peak power with a predetermined value and division unit.

Official note is taken that comparison unit for comparing the peak power with a predetermined value (threshold) is well known and expected in the art.

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to compare the determined peak power with a threshold value in order to differentiate expected signals from noise or interference.

Seto teaches comprises a division unit for dividing the peak power of the midamble by average power of the noise and outputting a division signal to the determining module (paragraphs 105-119). It would be obvious to one of ordinary skill in the art that the midamble in Seto can be replaced with a claimed preamble since the midamble is used for synchronization purposes (paragraph 8). Therefore it would be obvious to one of ordinary skill in the art to combine the preamble synchronization and peak detecting module of Fouche in view of the applicant's admitted prior art with the power calculating method and apparatus of Seto in order to create an improved system with the capability to measure a signal-interference ratio with a high degree of accuracy (paragraph 7).

With regards to claim 24, Fouche in view Poulbere in further view of Filipovic with AAPA and Seto teaches the limitations of claim 14.

Fouche in view of the applicant's admitted prior art teaches the correlation module and determination module as disclosed in claim 12 and the division module is taught in claim 17.

Fouche does not explicitly teach comparison unit for comparing the peak power with a predetermined value and division unit.

Official note is taken that comparison unit for comparing the peak power with a predetermined value (threshold) is well known and expected in the art.

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to compare the correlation signal with a threshold value in order to differentiate expected signals from noise or interference.

Seto teaches comprises a division unit for dividing the peak power of the midamble by average power of the noise and outputting a division signal to the determining module (paragraphs 105-119). It would be obvious to one of ordinary skill in the art that the midamble in Seto can be replaced with a claimed preamble since the midamble is used for synchronization purposes (paragraph 8). Therefore it would be obvious to one of ordinary skill in the art to combine the preamble synchronization and peak detecting module of Fouche in view of the applicant's admitted prior art with the power calculating method and apparatus of Seto in order to create an improved system with the capability to measure a signal-interference ratio with a high degree of accuracy (paragraph 7).

With regards to claim 25, Fouche in view Poulbere in further view of Filipovic with AAPA and Seto teaches the limitations of claim 15.

Fouche in view of the applicant's admitted prior art teaches the correlation module and determination module as disclosed in claim 12 and the division module is taught in claim 17.

Fouche does not explicitly teach comparison unit for comparing the peak power with a predetermined value and multiplication unit.

Official note is taken that comparison unit for comparing the peak power with a predetermined value (threshold) is well known and expected in the art.

Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to compare the correlation signal with a threshold value in order to differentiate expected signals from noise or interference.

Seto teaches comprises a division unit for dividing the peak power of the midamble by average power of the noise and outputting a multiplication signal to the determining module (paragraphs 105-119). It would be obvious to one of ordinary skill in the art that the midamble in Seto can be replaced with a claimed preamble since the midamble is used for synchronization purposes (paragraph 8). Therefore it would be obvious to one of ordinary skill in the art to combine the preamble synchronization and peak detecting module of Fouche in view of the applicant's admitted prior art with the power calculating method and apparatus of Seto in order to create an improved system



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with the capability to measure a signal-interference ratio with a high degree of accuracy (paragraph 7).

With regards to claims 29, Fouche in view Poulbere in further view of Filipovic with AAPA and Seto teaches the limitations of claim 23.

Fouche further teaches the determining module further comprises a determining unit for determining if the packet arrives relative to a comparison (col. 2, lines 15-20 and claims 2-4).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES M. PEREZ whose telephone number is (571)270-3231. The examiner can normally be reached on Monday through Friday: 9am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James M Perez/  
Examiner, Art Unit 2611  
7/3/2008  
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